granted, does that throw any light upon the differentiation of cells; or upon the orderly arrangement of the differentiated cells to form tissues; or upon the precise interweaving of tissues to form organs; or upon the arrangement of the organs in definite shapes and mutual space-relations ?

Perhaps Needham's one statement which does seem to constitute, if true, a real contribution to the description of the process of morphogenesis and a preparation for some explanatory theory is the following : ' At the beginning of development parts or monads of the egg are undetermined, and one of the most fundamental processes in development consists in the closing of doors, i. e., in determination, in the progressive restriction of possible fates/ Up to the point of gastrulation of the embryo, the various parts on transplantation conform to the tissues surrounding them, submit as it were to the influences received according to their new positions and exerted presumably by the immediately surrounding tissues. After gastrulation, this no longer occurs ; rather each graft or transplanted bit of the gastrula persists along the line of development which it would have followed if not transplanted, regardless of what tissues surround it.

But then, again, we are driven to ask, Is this story of the closing of doors really true ? For, first, we are told again and again by the geneticists that it is the genes which do all the important work of morphogenesis ; and that throughout development every cell continues to receive at its birth (by cell division) all the

genes possessed by the parent cell, so that in the adult organism every cell has the same set of genes as the fertilized egg-cell from which it derives. Secondly, we have, in both plants and animals, well-authenticated instances in which